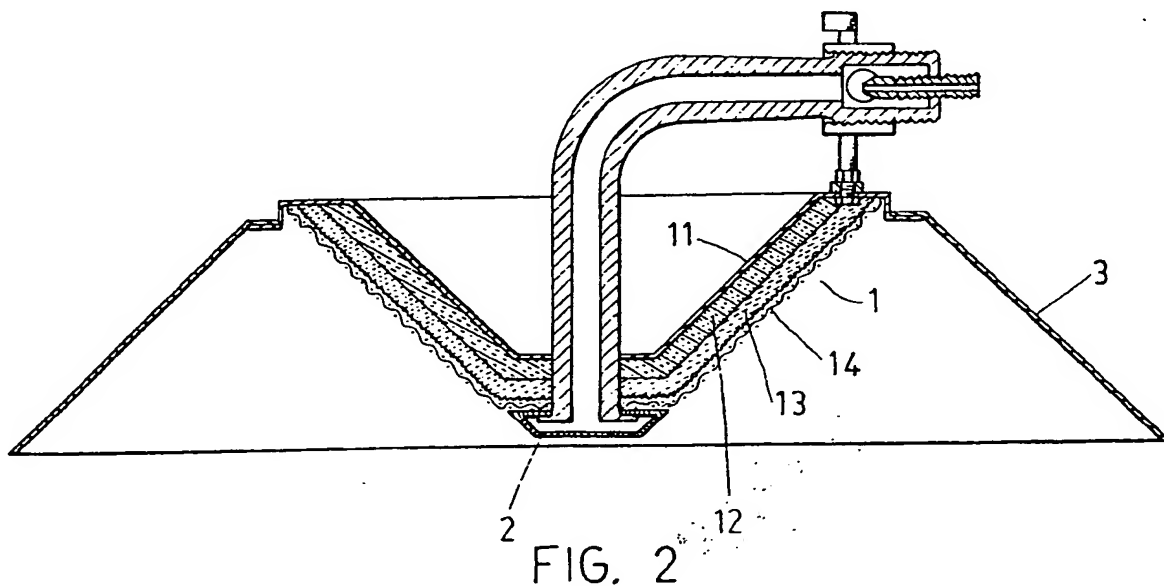


(12) UK Patent Application (19) GB (11) 2 091 869 A

(21) Application No 8102426  
(22) Date of filing 27 Jan 1981  
(43) Application published  
4 Aug 1982  
(51) INT CL<sup>3</sup>  
F23D 13/12  
(52) Domestic classification  
F4T EB  
(56) Documents cited  
None  
(58) Field of search  
F4T  
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(54) A slight flame type infra-red  
radiant heater

(57) This invention relates to a sight  
flame type infra-red radiant heater  
which comprises a heater body 1  
shaped in a reverse cone, a reflecting  
shade 3 shaped in a normal cone  
mounted upon the upper portion of the  
heater body and a ring shaped gas  
burner 2 onto the bottom of the heater  
body, being characterized in that the  
heater body further comprises a pro-  
tecting layer 11, a heat insulating layer  
12 and a black material layer 13 sup-  
ported by a network layer 14 of heat  
resisting alloy, so that the black mate-  
rial layer heated to red by the flame  
coiling up from the gas burner may  
radiate infra-red rays along the conical  
surface of the heater body.



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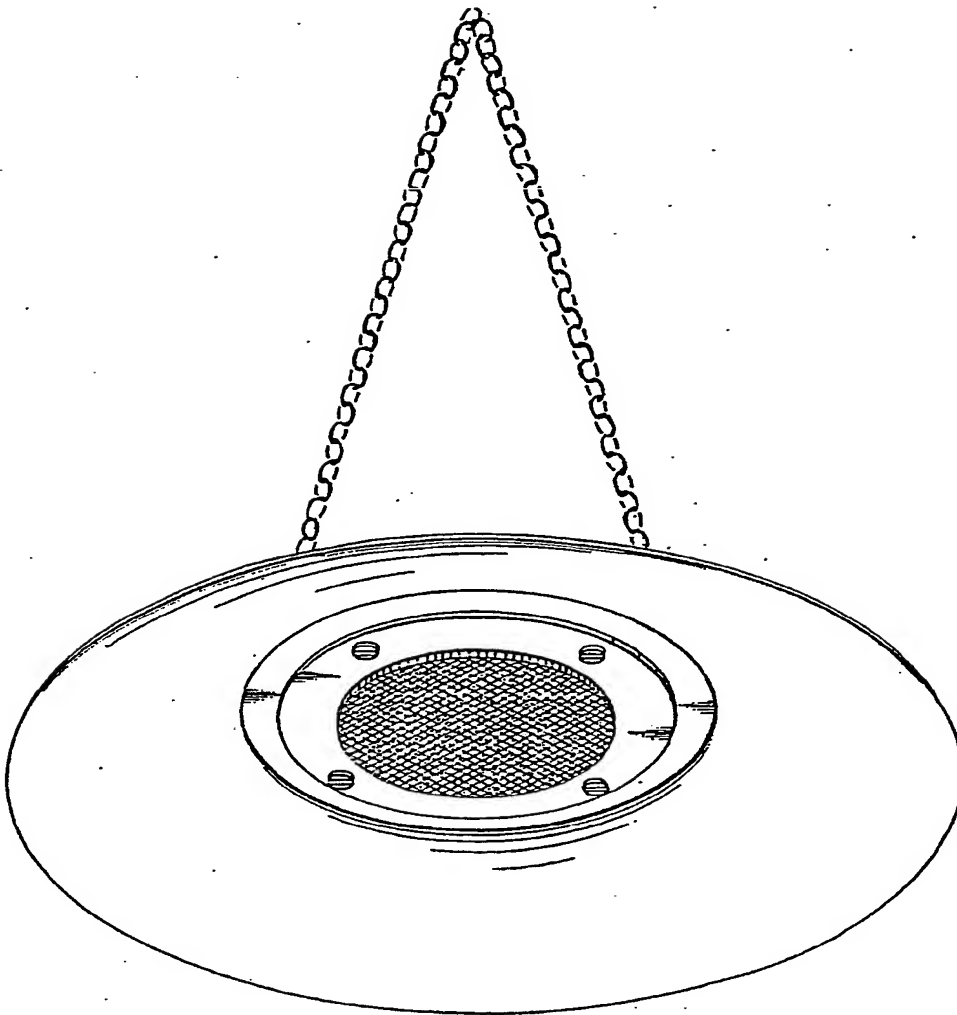
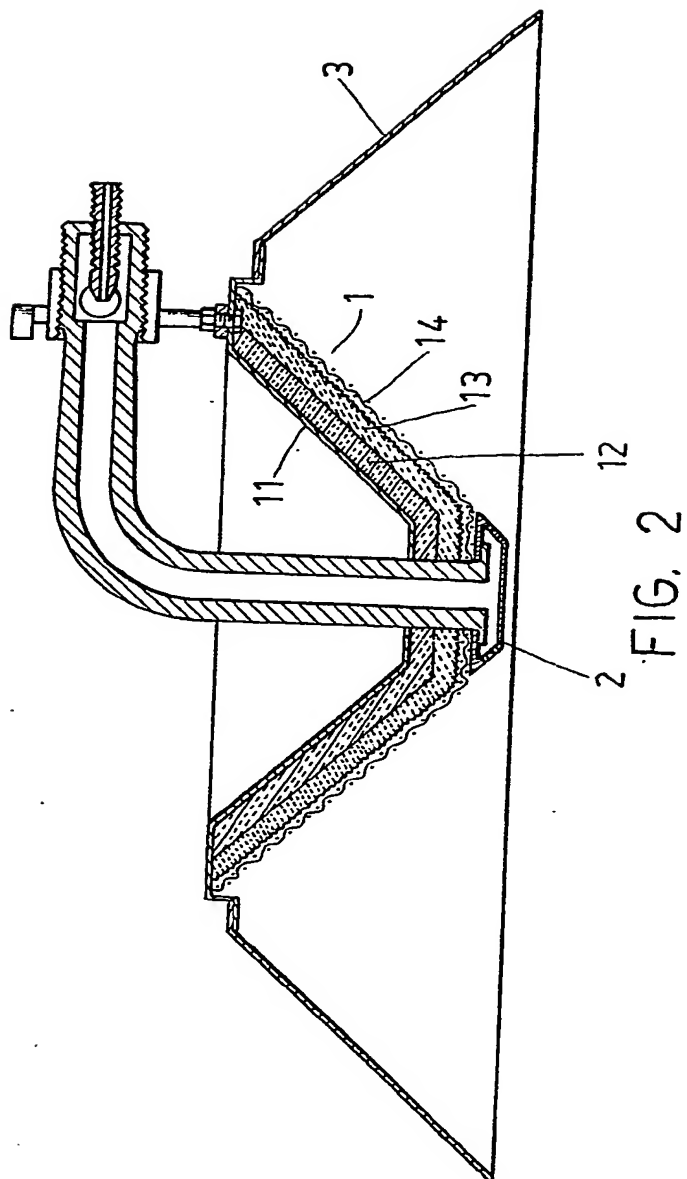


FIG. 1 PRIOR ART

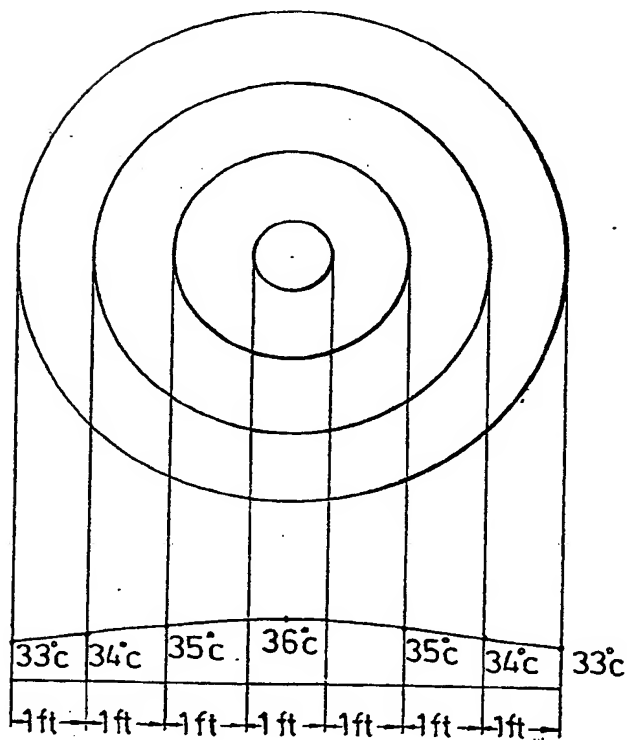
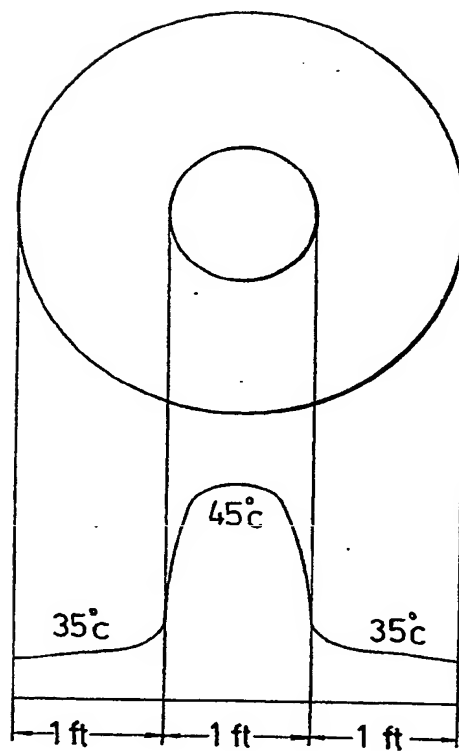
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## SPECIFICATION

**A sight flame type infra-red radiant heater**

- 5 This invention relates to an infra-red radiant heater, particularly to a sight flame type infra-red radiant heater.

Figure 1 shows a conventional infra-red radiant heater wherein the porcelain plate heated to red by the flame hidden in the flame holes of the porcelain plate may radiate infra-red rays. The conventional infra-red radiant heater has the following features:

1. the short flame hidden in the flame holes of the porcelain plate will not reach the heated object;
  2. the heat directly conveyed by the radiant rays will not get the heated object on fire; and
  3. the conventional infra-red heater may be mounted in any other positions than beneath the heated object.
- 10 However, in application to keeping baby animals warm, the conventional infra-red heater has the following defects:

1. the temperature is not adjustable; and
2. the heat is not equally distributed; in other words, the temperature varies greatly in different areas.

Since the conventional infra-red heater as shown in Figure 1 is not applicable to the pastorage, an infra-red bulb is used instead, though the infra-red bulb is subject to damage and limitation in use.

According to the present invention, a sight flame type infra-red radiant heater comprises a heater body shaped in a reverse cone, a reflecting shade shaped in a normal cone mounted upon the upper portion of the heater body and a ring shaped gas burner onto the bottom of the heater body, being characterized in that the heater body further comprises a protecting layer, a heat insulating layer and a black material layer supported by a network layer of heat resisting alloy, so that the black material layer heated to red by the flame coiling up from the gas burner may radiate infra-red rays along the conical surface of the body.

It is an object of the present invention to provide a sight flame type infra-red radiant heater wherein: the temperature is adjustable; the heat is equally distributed; and the temperature gradient is not great.

It is another object of the present invention to provide a sight flame type infra-red radiant heater which is particularly applicable in heating from above, quite suitable for keeping the baby animals warm.

The present invention will be further described with reference to the accompanying drawings, the description being given by way of example only, not by way of limitation.

Figure 1 is a perspective view of a conventional infra-red radiant heater;

Figure 2 is a sectional view of a preferred embodiment according to the present invention.

Figure 3 is a diagram showing the temperature gradient of a conventional infra-red radiant heater; and

Figure 4 is diagram showing the temperature

gradient of a preferred embodiment according to the present invention.

As shown in Figure 2, indicated at numerals 1, 2 and 3 are respectively a heater body, a ring shaped gas burner and a reflecting shade. The heater body 1 is shaped in a reverse cone with the tapered end off, while the reflecting shade 3 is shaped in a normal cone with the tapered end off likewise. The gas burner 2 mounted onto the bottom of the heater body 1 is connected with a gas mixing tube (not indicated with numeral) which passes through the axis of the heater body 1. The reflecting shade 3 of sheet iron is painted to white inside by means of refractory paints. In assemblage, the reflecting shade 3 is mounted upon the upper portion of the heater body 1, thus encasing the heater body 1.

Also as shown in Figure 2, the heater body 1 sequentially comprises a protecting layer 11 of iron, a heat insulating layer 12, a black material layer 13 and a network layer 14 of refractory alloy; the network layer 14 opposite to the inside of the reflecting shell 3 is the outermost layer of the cone defined by the heater body 1. The black material layer 14 made of the material having high blackness forms with wrinkleless as so to increase the area of radiation.

The flame coiling up from the gas burner 2 along the surface of the black material layer 13 will heat the black material layer 13 and the network layer 14 to red to radiate infra-red rays downward. The temperature upon the surface of the black material layer 13 and the heat released are adjustable by means of the gas burner 2. When the gas increases, the flame will coil up along the surface of the black material layer 13 until it is stopped by the reflecting shade 14, thus heating all or the most of the black material layer 13. However, when the gas decreases in quantity to release, the flame will coil up a half way or less of the black material layer 13 and the rest of the black material layer 13 can only be heated by way of heat transmission. Accordingly, the heat released by the present invention is adjustable; it is applicable in whatever season.

For ease of understanding, two experiments are disclosed as follows:

**Experiment 1**

by means of: a conventional infra-red radiant heater the diameter of the porcelain plate: 250m/m  
the diameter of the gas nozzle: 0.7m/m  
the pressure of gas in supplying: 360 m/m AQ  
the distance between the heater and the heated object: 1 m  
the temperature gradient: as shown in Figure 3, the temperature within one feet, that is, the diameter of the inner circle is 45°C, while the temperature one foot outside of the diameter of the inner circle is 35°C; the effective heating diameter extends for three feet and the temperature differential is 10°C.

**Experiment 2**

by means of: a sight flame type infra-red radiant heater according to the present invention;  
the maximum diameter of the heater body: 250m/m;  
the heater body inclines at: 45°;

- the diameter of gas burner: 60m/m;  
the diameter of the gas nozzle: 0.7m/m;  
the reflecting shade inclines at 45°, that is, the  
conical surface of the reflecting shade is vertical to  
5 the conical surface of the heater body;  
the gas tube in an L shape is fixed onto the heater  
body; the heater body is further provided with a  
chain for convenience of hanging;  
the pressure of the gas in supplying: 360m/m AQ:  
10 the distance between the heater and the heated  
object: 1m;  
the temperature gradient: as shown in Figure 4, the  
effective area extends to seven feet; the temperature  
which is 36°C within one foot in the center thereof  
15 drops 1°C each foot outward.

It is to be understood by those skilled in the art that  
the foregoing disclosure is given by way of illustra-  
tive example only, rather than by way of limitation,  
and that without departing from the principle and  
20 the scope of the invention, the details may be  
changed and modified within the scope of the  
appended claims.

#### CLAIMS

- 25 1. An infra-red radiant heater comprising  
a heater body shaped in a reverse cone, having a  
black material layer;  
a gas burner mounted onto the bottom of said  
30 heater body, and  
a reflecting shade surrounding said heater body,  
whereby the flame coiling up from said gas burner  
along the surface of said heater body may heat said  
black material layer to red to radiate infra-red rays.  
35 2. An infra-red radiant heater as claimed in Claim  
1 wherein said heater body further has a protecting  
layer, a heat insulating layer, being characterized in  
that said black material layer is the outermost layer  
of said heater body.  
40 3. An infra-red radiant heater as claimed in Claim  
2 wherein said black material layer is formed with  
wrinkles on the surface thereof.  
4. An infra-red radiant heater as claimed in Claim  
3 wherein said black material layer is supported by a  
45 network layer of refractory alloy.  
5. An infra-red radiant heater as claimed in Claim  
1 wherein said gas burner is ring shaped.  
6. An infra-red radiant heater as claimed in Claim  
1 wherein said reflecting shade is shaped in a normal  
50 cone.  
7. An infra-red radiant heater as claimed in Claim  
6 wherein the conical surface of said reflecting shade  
is vertical to the conical surface of said heater body.  
8. An infra-red radiant heater substantially as  
55 described herein with reference to the accompany-  
ing drawings.